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(54) Title: DENDRITIC POLYMERS WITH ENHANCED AMPLIFICATION AND INTERIOR FUNCTIONALITY

(57) Abstract: Dendritic polymers with enhanced amplification and interior functionality are disclosed. These dendritic polymer are made by use of fast, reactive ring opening chemistry (or other fast reactions) combined with the use of branch cell reagents in a controlled way to rapidly and precisely build dendrimer structures, generation by generation, with precise structures with cleaner chemistry, typically single products, lower excesses of reagents, lower levels of dilution, higher capacity method, more easily scale to commercial dimensions, new ranges of materials, and lower cost. The dendrimer composition prepared have novel internal functionality, greater stability, e.g., thermal stability and less or no reverse Michaels reaction, and which reach encapsulation surface densities at lower generations. Unexpectedly, these reactions of poly-functional branch cell reagents with polyfunctional surfaces do not create gelled materials. Such dendritic polymers are useful as demulsifiers for oil/water emulsions, wet strength agents in the manufacture of paper, proton scavengers, calibration standards for electron microscopy, making size selective membranes, and agents for modifying viscosity in aqueous formulations such as paint. When these dendritic polymers have a carried material associated with their surface and/or interior, then these dendritic have additional properties due to the unique characteristics of the dendritic polymer.

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